

rather long series in the general collection of Coleoptera at the British Museum, with which it agrees in every way.

As the descriptions in the literature are neither very full, nor accurate, I have drawn up the following careful description:—

Head round, deflexed, finely punctured; eyes oblong oval, not prominent; *antennae* narrow at base, thickened towards apex, broadest in middle, joints 6-10 serrate. *Thorax* arcuately narrowed to apex, broadest at base with acute posterior angles, base considerably produced towards scutellum, closely punctured with larger and smaller punctures, the larger punctures distinctly longer than broad. *Elytra* rounded, about as broad as together long, widely separately, rounded at apex, with shallowly engraved punctured striae, interstices finely punctured. *Pygidium* with double puncturation, the larger punctures round shallow but more deeply impressed in front than behind. *Legs* fairly stout; *posterior femora* curved, not toothed behind; *posterior tibiae* armed with two nearly equal, movable black spurs. *Long*, 1.5-3.2mm.

The genus *Spermophagus* [(Steven in litt?) Schönh. *Gen. Spec. Curc.* 1 102 (1833)] differs from *Larva*, Scop. (= *Bruchus*, L.) and allied genera in that the head is deflexed and not constricted behind the eyes into a neck, and the spurs to the hind tibiae are movable. A specimen of this beetle was taken by Mr. J. R. Dibb, when in company with Mr. W. D. Hincks, by shaking leaves from a hedge bottom at Blackmoor, near Shadwell, Leeds, in April, 1924.

The insect is found on the Continent on *Cisti*, *Convolvulus sepium*, etc., and *Crataegus*. The European Catalogue gives "Europe" as its distribution, and Reitter says it is widely distributed in Central Europe.

Notes on three insects bred from Galls on Juniper.

By WM. FASSNIDGE, M.A., F.E.S.

I spent the Easter holidays of 1930 in France, in the Department of the Drôme, at Dieulefit, a small town some fifteen miles east of the Rhône at Montélimart. As the season was a late one and the weather not always very favourable for collecting by day, I gave a certain amount of attention to searching for the larvae of several species of *Aegeriadae*, with quite gratifying success. I found without great difficulty larvae, and pupae too, of *Aegeria sphegiformis*, Gern., in young alders, larvae of *A. respiformis*, L., in stumps of evergreen oak, of *A. ichneumoniformis*, Fb., in roots of *Anthyllis vulneraria*, and capped mines of *A. andrenaeformis*, Lasp., in stems of *Viburnum lantana*. None of these species was new to me in the larval stage so that I was pleased to discover signs of the presence of larvae in swellings in twigs and stems of the stunted juniper bushes that grew so abundantly all over the barren dry slopes of the arid hills and mountains all around the town. From a little distance one could see quite easily the withered brown branches and twigs that betrayed the presence of some insect or fungoid enemy, and closer examination revealed lower in the stem the damage that at last had killed the branch and caused the juniper needles to turn a lighter or darker brown according to the age of the injury. I examined a large number of swellings, and cut open a great many in an attempt to satisfy myself as to the cause of the

galls. In many cases, where the dead twigs and leaves were one or more years old and of a very dark brown, I found only the old traces of larval borings, mostly just under the bark and rarely going into the middle of the stem; and often, owing to the shelter afforded by a thicker bush than usual, there would still be abundant frass to prove that the borings were the work of larvae. Where the leaves were lighter brown in colour I usually found a rough knotty swelling not very far down the stem, a gall of variable size and shape, just a thickening of the stem for an inch or two of its length. Inside these galls were at least three different species of larvae feeding in tunnels and borings of varying size and depth. Two or three larvae, sometimes more, were present in each gall, but so far as I could see no two different species lived together in same gall. The first larva found was that of an Aegeriid and I at once jumped to the erroneous conclusion that this larva was the cause of all the swellings and was therefore fairly common in this locality. When however I began to search more patiently and systematically, I soon discovered my mistake, for I found that a coleopterous larva was far more often present than that of the clearwing. Lastly I discovered that some of the swellings contained larvae and occasionally pupae of a Tortrix. I ought to add here that I found also numerous galls on the juniper in which there were no traces of larval borings, but these galls were more regularly spindle shaped, and I decided that they were caused by some species of *Gymnosporangium*.

I am not in a position to state definitely that the larvae found in the swellings were the sole cause of the galls, though I consider this to be highly probable. When however such a great authority as the Abbé de Joannis in his "Révision critique des espèces de Lépidoptères cécidogènes d'Europe et du Bassin de la Méditerranée," published in the *Ann. Soc. Ent. de France*, XCI., 1922, gives it as his opinion, on the evidence available, that we have here gall-eaters and not gall-makers, it behoves a modest field-worker like myself to be excessively careful. Of course I brought home a certain number of tenanted galls, in spite of the fact that I destroyed many larvae by opening up their borings during my investigations. I forced these larvae as is my usual custom with wood-boring insects, and bred out during May a dozen specimens of the clearwing, five of the Tortrix, and five of the Coleopteron. It remained now to identify these insects. The beetle proved to be *Pocilonota festiva*, L., a beautiful green Buprestid, which is said to be rather rare. The Tortrix is probably *Grapholitha duplicana*, Zett., or a closely allied species—I hope the question will soon be settled by the experts. The clearwing I assumed to be *Aegeria spuleri*, Fuchs, a species very close to our own common *A. tipuliformis*, Cl.; but I am informed that Monsieur Le Cerf, who is a very great authority on the group, is unable to find any constant difference between the two species and therefore considers *A. spuleri* to be a form of *A. tipuliformis*. Fuchs' account of his new Aegeriid bred from swellings in juniper is to be found in the *Int. Ent. Zeitschr.* 11, 1908, pp. 38, 39, and though it seems at first sight very improbable that this clearwing should be *A. tipuliformis*, considering the great difference of habitat and foodplant, yet it is perhaps best to leave the question to those qualified to deal with it. Is it too much to hope that some

reader with opportunities for investigation and study will devote some time during 1931 to this problem of the galls to be found on juniper in France? It is even possible that they may turn up somewhere in England.

Early Stages of *Eudamus undulatus*, Hew.

By CAPT. K. J. HAYWARD, F.E.S., F.R.G.S.

On March 27th (1926) during the early afternoon, I had the pleasure of watching a specimen of the above butterfly ovipositing on a bush of *Cassia corymbosa*, Lam. (locally known as "Sen del Campo" or "Rama Negra"). I at first supposed I had found *Eudamus catillus*, Cr., laying on a fresh foodplant (having but recently identified the same as *Rhynchosia senna*, Gill.—locally "Sen del zorro"). However, even a cursory glance at the eggs showed this was not the case as they differed materially in colour if in nothing else. I was able to collect a great number, many of which were obligingly laid whilst I waited. I regret that few of these were brought through, many proving sterile, and the difficulty of obtaining sufficient fresh foodplant due to the bushes shedding their leaves, and to their scarcity, accounted for several larvae. The operation of laying was in no way specialised, the imago fluttering quickly from leaf to leaf to deposit with a bend of the abdomen an egg here and there on the upper side of the leaves and in no particular position.

The eggs are in appearance at first hedge-sparrow blue and somewhat transparent, rapidly becoming greyish and more opaque, being smooth and round of 0.8mm. diameter. About the fourth to fifth day the egg becomes much whiter and the larval bead appears as a black spot, the young larva hatching out shortly afterwards.

On emergence the young larva is 1.2mm. in length with a deep brownish black head and a thick saddle of this same colour across the dorsum on the 1st thoracic segment, the remainder of the body being transparent yellowish with the alimentary canal showing darker greenish, and with a few short grey hairs, especially along the margin. The life stages of this larva correspond very closely to those of *Eudamus catillus*, Cr., which have already figured in these notes. The larva immediately on emergence forms for itself a tent, not as in the case just cited by turning down a leaf corner, but by drawing two leaves together, edge to edge, and fastening them in this position. As to whether the larva leaves this tent for feeding or other purposes I cannot say as I have always failed to find the larva outside, and although the bushes on which larvae are found always appear clean and uneaten, whilst the inner cuticle of the "tent" leaf is eaten away when the larva moves to fresh quarters, yet the "fitting" is so infrequent as to make it seem impossible for other to be the case. In its final stages the larva is some 23mm. in length, of 6mm. height, and in breadth at the first abdominal segment 7mm. Head rough, very deep brown, with a small chestnut spot on either side just above the mouth parts. Body greenish appearing grey, being closely speckled with this colour, alimentary canal darker. Lower lateral area yellowish on a lighter greenish ground with a yellow marginal stripe, oblique downwards posteriorly on each segment. Beneath greenish.